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(Article begins on next page)

Losing the Farm: The Failure to Protect Farmworker Families from Pesticides

Danica Anderson

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I. Introduction: Farmworker Families and Pesticides

Farmworker families are the largely invisible victims of modern American agriculture's dependence on pesticides. Millions of farmworkers, including children, labor daily in fields and greenhouses, tending and harvesting crops. Multiple avenues of exposure to pesticides affect both farmworkers and their families – particularly children – and socioeconomic factors often exacerbate the health and safety risks from these exposures. As a result, farmworker pesticide exposure implicates concerns about both child health and environmental justice. Prior executive and legislative actions have sought to address these issues by directing responsible agencies to consider disproportionate impacts on children and underrepresented populations. Unfortunately, in the realm of pesticides, these directives have gone largely unheeded.

While the Food and Drug Administration (FDA) regulates pesticide residues on foods to protect the American consumer, the Environmental Protection Agency (EPA) regulates pesticide approvals and establishes safe overall pesticide exposure levels under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). In the past, EPA has taken some steps to ensure that farmworkers and children are protected from overexposure. However, these past regulatory efforts have failed to consider some important sources of pesticide exposure and have not considered the disproportionate effects of pesticides on farmworker families. Recently, under the Obama administration, the EPA has taken steps to close these loopholes, but more action is needed.

This paper provides a comprehensive introduction to the problem of farmworker pesticide exposures and discusses past approaches and their failings. Part II describes the risks

facing farmworker families and the particular issues of environmental justice and child safety implicated therein. Part III briefly describes the statutory and regulatory framework governing EPA's pesticide approval and review process, and EPA's existing obligations to protect children and underrepresented groups. Part IV identifies EPA's approaches to farmworker and child safety under past administrations, and explains how these measures fall short of adequately protecting farmworker families.

II. The Problem: Multiple Routes of Exposure, and Limited Means to Respond

Pesticides¹ are an inescapable part of life for farmworkers and agricultural communities. Both farmworkers and their families are exposed to pesticides through multiple avenues, yielding cumulative exposures often far in excess of those facing the average American consumer. Yet socioeconomic, cultural, and political realities often bar the most at-risk individuals from obtaining adequate protection against exposure, receiving sufficient medical treatment when exposure does occur, or attracting the attention to their plight necessary to prompt significant legal changes.

a. Pesticide Prevalence and Risks

Pesticides are a pervasive part of modern American agriculture. In 2001, over 1.2 billion pounds of pesticides were applied in the U.S., comprising nearly a quarter of the world market.²

Agriculture accounts for three-quarters of pesticide usage in the U.S.³ Of the more than \$11

¹ For purposes of this paper, "pesticide" is defined largely as it is in FIFRA: "any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest," or "intended for use as a plant regulator, defoliant, or desiccant." 7 U.S.C. § 136(u). The term encompasses not only insecticides but also herbicides, fungicides, rodenticides, and fumigants.

² TIMOTHY KIELY, DAVID DONALDSON & ARTHUR GRUBE, EPA, PESTICIDE INDUSTRY SALES AND USAGE: 2000 AND 2001 MARKET ESTIMATES 8 tbl.3.1 (2004).

³ See *id.* at 12 tbl.3.4 (675 million pounds (76%) of "conventional" pesticides); *id.* at 18 tbl.3.11 (232 million pounds (74%) of "other" pesticides). "Conventional" pesticides include, *inter alia*, herbicides, plant growth regulators, insecticides, miticides, fungicides, nematocides, and fumigants. See *id.* at 12. "Other" pesticides include sulfur, petroleum oil, sulfuric acid, insect repellants, and moth control products. See *id.* at 18.

billion spent on pesticides in 2000 and 2001, the vast majority (68%) were purchased for use in the agricultural industry,⁴ constituting nearly 4% of total farm expenditures.⁵ Two-thirds of U.S. farms with harvested cropland use pesticides of one kind or another.⁶ Despite increasing information on health risks and growing public concern, pesticide use in the agricultural sector remained fairly constant over the last two decades of the twentieth century.⁷

Farmworkers labor on the front lines of American agriculture and are exposed to these pesticides in numerous ways. Some farmworkers are directly employed as “pesticide handlers,” mixing, loading, or applying pesticides, cleaning and repairing pesticide equipment, or otherwise directly contacting pesticides.⁸ The vast majority of farmworkers serve as “agricultural workers,” “involved in the production of agricultural plants” by assisting in cultivation or harvesting activities at a farm, greenhouse, nursery or forest.⁹ While EPA regulates working conditions for pesticide handlers more stringently,¹⁰ handlers still face risks from pesticide spills and splashes, as well as defective or missing protective equipment.¹¹

Both handlers and agricultural workers may be exposed to pesticides along numerous routes. They may be exposed to *direct spray* in their working area, or they may contact *residues* on plants or on soil.¹² They may be exposed through pesticide *drift*, in which airborne pesticide particles or pesticide-contaminated dust float away from the application site, often following

⁴ *Id.* at 6 tbl.2.3.

⁵ *Id.* at 7 tbl.2.4.

⁶ *See id.* at 20 tbl.4.2.

⁷ *See id.* at 28 fig.5.6

⁸ *See* EPA, WPS QUICK REFERENCE GUIDE (2005), *available at* <http://www.epa.gov/agriculture/quickreferenceguide.pdf>.

⁹ *Id.*; *see also* EPA, Worker Protection Standard for Agricultural Pesticides, <http://www.epa.gov/agriculture/twor.html> (last visited Mar. 16, 2010).

¹⁰ *See id.* (describing more stringent requirements for employers of handlers versus employers of agricultural workers); *infra* Part IV.a.

¹¹ Farmworker Justice, Farmworkers and Pesticides, <http://www.fwjjustice.org/Health&Safety/Pesticides.htm> (last visited Mar. 16, 2010).

¹² *Id.* Both of these types of exposures are nominally prevented by the EPA’s protective standards, *see infra* Part IV.a, but in actuality these continue to be common routes for pesticide poisonings.

aerial applications.¹³ And they may be exposed through *volatilization*, in which solid or liquid pesticide residues remaining on crops or soil after spraying change to a vapor or gas and become airborne.¹⁴ And underreporting of pesticide exposures and injuries is likely a significant problem due to the many disadvantages confronting farmworkers, as discussed below.¹⁵

b. Farmworker Demographics and Disadvantages

While exact numbers are hard to come by, reliable estimates suggest there are about 2.5 million farmworkers in the U.S., 1.8 million of whom are crop workers.¹⁶ Demographics within this group are well documented by the U.S. Department of Labor (DoL)’s annual survey of agricultural workers.¹⁷ The vast majority (78%) of farmworkers are foreign-born, nearly all (75%) from Mexico.¹⁸ Farmworkers are predominantly male and young, and approximately half

¹³ See EPA, Pesticide Spray and Dust Drift, <http://www.epa.gov/pesticides/factsheets/spraydrift.htm> (last visited May 8, 2010).

¹⁴ See EPA, Pesticide Issues in the Works: Pesticide Volatilization, <http://www.epa.gov/pesticides/about/intheworks/volatilization.htm> (last visited May 8, 2010).

¹⁵ See, e.g., Alice Larson, *Environmental/Occupational Safety and Health*, in MIGRANT HEALTH ISSUES 8, 11 (Nat’l Ctr. for Farmworker Health, Inc., 2001), available at <http://www.ncfh.org/?pid=22> (“Even in states with mandatory reporting of suspected pesticide-related illness, there is a sense that not all incidents are recognized and reported.”)

¹⁶ U.S. GEN’L ACC’TING OFFICE, GAO/RCED-00-40, PESTICIDES: IMPROVEMENTS NEEDED TO ENSURE THE SAFETY OF FARMWORKERS AND THEIR CHILDREN 6 (2000) [hereinafter GAO, PESTICIDES]. While the GAO’s report is somewhat out of date, national-level estimates are extremely difficult to generate. See E-mail from Alice C. Larson, Ph.D., to author (Apr. 9, 2010, 5:25 PM) (on file with author) (describing difficulties in defining and quantifying farmworkers); Nat’l Ctr. for Farmworker Health, Inc., Enumeration and Population Estimates, <http://www.ncfh.org/?pid=23> (last visited May 8, 2010) (explaining the challenges of generating an accurate number of farmworkers in the U.S., and providing population estimates and maps for eleven states). The cited figure is close to the most recent estimate from the U.S. Department of Agriculture, estimating just over 2.6 million hired farmworkers. See U.S. DEP’T OF AGRIC., NO. AC-07-A-51, 2007 CENSUS OF AGRICULTURE, VOL. 1, at 336 tbl.7 (2009), available at http://www.agcensus.usda.gov/Publications/2007/Full_Report/index.asp. However, this figure excludes contract workers, see *id.* at App. B. B-13, and reflects a suspiciously low number of migrant workers — just over 47,000, see *id.* at 336 tbl.7. Consequently, the total figure may thus be considerably higher, as some sources suggest. See, e.g., HUMAN RIGHTS WATCH, FINGERS TO THE BONE: UNITED STATES FAILURE TO PROTECT CHILD FARMWORKERS 11 & n.7 (2000) [hereinafter FINGERS TO THE BONE], available at <http://www.hrw.org/legacy/reports/2000/frmwkr/> (citing figure of 2.5 million seasonal farmworkers and 1.5 million migrant farmworkers for a total of 4 million).

¹⁷ DoL’s most recent published report compiling this annual data is from 2001–2002, and the data herein comes from that report. OFFICE OF PROGRAMMATIC POLICY, U.S. DEP’T OF LABOR, RESEARCH REPORT NO. 9, FINDINGS FROM THE NATIONAL AGRICULTURAL WORKERS SURVEY (NAWS) 2001–2002 (2005) [hereinafter NAWS REPORT].

¹⁸ *Id.* at 3. Close to half (42%) are migrant laborers, meaning they “travel at least 75 miles during a 12-month period to obtain a farm job.” *Id.* at 7.

are married and have children.¹⁹ The average farmworker has not attended school beyond seventh grade,²⁰ and the overwhelming majority of foreign-born farmworkers speak little or no English.²¹ More than half (53%) are not authorized to work in this country.²² Ninety percent had only one or two employers in the prior year, and three-quarters expect to continue as farmworkers for at least the next five years.²³

Poverty and a lack of access to health care are also major concerns. Farmworkers are typically paid by the hour at low wages for predominantly seasonal work, severely limiting income.²⁴ Agricultural employers are exempted from many federal protective standards, including overtime and minimum wage laws, as well as health and safety standards.²⁵ Thirty percent of farmworker families have incomes below the poverty line, and poverty increases with family size.²⁶ Farmworker housing is often in deplorable condition or simply unavailable, leaving farmworkers without laundry or bathing facilities,²⁷ and housing often is so close to the fields that pesticide exposure can occur at home as well.²⁸ Only 23% of farmworkers report

¹⁹ See *id.* at 9–10 (79% male and 81% under age 45); *id.* at 12 (58% married and 51% with children).

²⁰ See *id.* at 18.

²¹ Among foreign-born farmworkers, 54–57% self-reported that they do not speak English at all, and only 3–4% reported speaking English “well.” *Id.* at 22. Among farmworkers overall (including U.S.-born workers), 44% do not speak English at all, and only 30% reported speaking even “some” English. See *id.* at 21.

²² *Id.* at 6.

²³ See *id.* at 23, 29.

²⁴ See *id.* at 35 (60% work seasonally), 37 (79% paid hourly), 38 (average pay \$7.25 per hour). Workers paid hourly (as opposed to by the piece), employed seasonally, and engaged in pre-harvest tasks (including pesticide application) are paid on average less than \$7 per hour. See *id.* at 39 tbl.5.8.

²⁵ See U.S. GEN’L ACC’TING OFFICE, GAO/HEHS-98-193, CHILD LABOR IN AGRICULTURE: CHANGES NEEDED TO BETTER PROTECT HEALTH & EDUCATIONAL OPPORTUNITIES 16 (1998) [hereinafter GAO, CHILD LABOR].

²⁶ See *id.* at 47, 48 fig.6.1.

²⁷ See, e.g., Christopher Holden, *Housing*, in MIGRANT HEALTH ISSUES, *supra* note 15, at 40, 41; Quirina M. Vallejos, Sara A. Quandt & Thomas A. Arcury, *The Condition of Farmworker Housing in the Eastern United States*, in LATINO FARMWORKERS IN THE EASTERN UNITED STATES 37, 49 (Thomas A. Arcury & Sara A. Quandt eds., 2009) (citing studies).

²⁸ One nationwide farmworker housing survey found that 26% of housing units “were directly adjacent to pesticide treated fields,” and of these, 53% “lacked a working bathtub/shower, a laundry machine, or both.” Holden, *supra* note 27, at 41.

having health insurance,²⁹ and few farmworker families benefit from federal assistance programs.³⁰ Furthermore, many farmworkers do not own vehicles and cannot easily get to social service agencies or health care facilities when ill.³¹

Taken together, this data suggests that most farmworkers face significant disadvantages that make their exposure to pesticides a particularly acute problem. Due to poverty, lack of access to services, and concerns about their undocumented status, many farmworkers fail to leave work when they feel ill, seek medical care, or report pesticide exposure situations to responsible authorities. Poor working and living conditions may leave farmworkers unable to take appropriate protective measures when exposed (such as immediate washing of pesticide-laden skin and clothes).³² Farmworkers also may fear retaliation from their employer or the loss of job prospects if they complain or report problems with pesticides, training, or working conditions or take time off for sick leave.³³ Due to language and educational limitations, farmworkers may experience difficulty in understanding pesticide safety measures, gaining access to information about pesticides, or appreciating their legal rights.³⁴ They may be unable to communicate concerns about their working conditions or, in cases of pesticide exposure, may not be able to describe the circumstances of the exposure or their symptoms to medical staff and

²⁹ *Id.* at 41–42; *see also* CALIFORNIANS FOR PESTICIDE REFORM, *FIELDS OF POISON* 2002, at 10 (2002) [hereinafter *FIELDS OF POISON*] (reporting two-thirds of California farmworkers surveyed had no health insurance and only 11.5% got health insurance through their employer).

³⁰ Only 24% of farmworker households receive contribution-based benefits such as unemployment, social security, or disability payments, and only 22% receive needs-based benefits such as welfare, food stamps, public housing or Medicaid. *See FIELDS OF POISON*, *supra* note 29, at 50–51.

³¹ *Id.* at 10; *see also* NAWs REPORT, *supra* note 17, at 45.

³² *See* NAWs REPORT, *supra* note 17, at 45 (noting small but significant percentage of farmworkers (5%) did not have access to water for washing at work); sources cited *supra* notes 27–28.

³³ *See* Larson, *supra* note 15, at 11; Patricia G. Schnitzer & Jackilen Shannon, *Development of a Surveillance Program for Occupational Pesticide Poisoning: Lessons Learned and Future Directions*, 114 *PUBLIC HEALTH REPORTS* 242, 243 (1999); *FIELDS OF POISON*, *supra* note 29 at 9 (2002) (“The threat that sick leave (even a few hours) may lead to reduced pay or job loss is a strong deterrent against taking time off to visit the doctor.”).

³⁴ *See, e.g.*, Tina Castañares, *Outreach Services*, in *MIGRANT HEALTH ISSUES*, *supra* note 15, at 27, 28.

investigating agencies.³⁵ Furthermore, healthcare providers may be unfamiliar with symptoms of pesticide exposure, and may fail to investigate or consider a patient's work history or residence during diagnosis.³⁶ Given the disadvantages of this minority and low-income group, and the significant health hazards they face, farmworker pesticide exposure is clearly an issue of environmental justice.

c. Special Risks for Farmworker Children

Farmworker children are exposed to pesticides in several ways. First, many farmworkers *are* children.³⁷ Past DoL data found that nearly 130,000 fourteen- to seventeen-year-olds are employed in crop production — a likely underestimate³⁸ — and recent surveys show this age group makes up 6% of farmworkers.³⁹ The DoL survey does not cover children under the age of 14, even though federal law allows children as young as 10 to work in agricultural jobs.⁴⁰ And past data suggests that some children of farmworkers do work in the fields alongside their parents, although the percentage is small.⁴¹ Second, even children who do not work in the fields are sometimes brought there during the day, since both parents are working and day care may be

³⁵ See Larson, *supra* note 15, at 8, 11.

³⁶ See *id.* at 11–12 (discussing problem and some efforts to insure adequate training of healthcare professionals).

³⁷ See generally ASS'N OF FARMWORKER OPPORTUNITY PROGRAMS, CHILDREN IN THE FIELDS: AN AMERICAN PROBLEM (2007) [hereinafter AFOP, CHILDREN IN THE FIELDS] (discussing child farmworkers and proposing legal changes).

³⁸ See GAO, PESTICIDES, *supra* note 16, at 6; see also GAO, CHILD LABOR, *supra* note 25, at 23 (explaining likely reasons for underestimates). Some estimates are much higher. See FINGERS TO THE BONE, *supra* note 16, at 10 (citing United Farm Workers estimate of 800,000); AFOP, CHILDREN IN THE FIELDS, *supra* note 37, at 6 (estimating 400,000 to 500,000).

³⁹ NAWS REPORT, *supra* note 17, at 10 fig.2.2.

⁴⁰ See GAO, CHILD LABOR, *supra* note 25, at 31 tbl.3.1. In nonagricultural jobs, children cannot work until age 14. Additionally, children may be employed in *hazardous* agricultural jobs — including handling pesticides — at age 16, while hazardous jobs are entirely prohibited for children outside the agricultural sector. See *id.*; Shelly Davis, *Child Labor*, in MIGRANT HEALTH ISSUES, *supra* note 15, at 51, 54 (“As a result, a child can apply toxic pesticides on a farm at 16, but could not apply the same pesticides on a golf course until age 18.”)

⁴¹ See U.S. DEP'T OF LABOR, REPORT ON THE YOUTH LABOR FORCE 54 (2000) [hereinafter DoL, YOUTH LABOR] (reporting that, according to mid-1990s NAWS surveys, 6% of farmworker children did farmwork, and “[o]nly 3 percent of 6- to 13-year-olds and virtually none of the children under 6 were reported by their parents to have worked in the fields”). However, since such employment is illegal underreporting is obviously a major possibility.

hard to come by.⁴² Third, even children who do not go to the fields may be exposed to pesticides in their homes and communities. Nearly two-thirds of farmworker parents live with all of their children under the age of 18.⁴³ These children can be exposed to pesticide residues that the farmworker brings home on clothing, shoes, or skin,⁴⁴ and farmworker homes may lack adequate bathing facilities to wash off pesticide residues.⁴⁵ Many farmworkers and their families live on or near the agricultural fields,⁴⁶ increasing the risk that pesticides will drift into these residential areas.⁴⁷ This drift can enter and surround homes, schools, parks, and other areas where children are likely to face exposure.⁴⁸ Infants may be exposed to pesticides through breastmilk, soil and well water in agricultural areas may be contaminated with pesticides, and farm families may consume food taken directly from the fields, further increasing the risks of exposure.⁴⁹

Children face greater risks of harm from pesticides than adults, for several reasons. First, children may be disproportionately *exposed* to pesticides because they behave differently from adults. Children breathe and eat more than adults relative to their body weight, consume different foods, put objects in their mouths and have greater hand-to-mouth contact, and spend

⁴² See *id.* at 55 (reporting 7% of parents with children under 5 brought them to work sometime in the past year); GAO, PESTICIDES, *supra* note 16, at 6.

⁴³ NAWS REPORT, *supra* note 17, at 14.

⁴⁴ See Farmworker Justice, Pesticide Advocacy, <http://www.fwjjustice.org/Health&Safety/Advocacy.htm>; Letter from EPA Union Leaders to EPA Administrator Stephen Johnson 2 (May 24, 2006), *available at* <http://www.nrdc.org/media/docs/060525.pdf>.

⁴⁵ See FIELDS OF POISON, *supra* note 29, at 26 (recommending better housing “so farmworkers can follow recommendations to bathe after pesticide exposure”).

⁴⁶ See NAWS REPORT, *supra* note 17, at 45 (11% of farmworkers live where they work and 40% within nine miles); Christopher Holden, *Housing*, in MIGRANT HEALTH ISSUES, *supra* note 15, at 40, 41 (26% of units surveyed adjacent to pesticide-treated fields).

⁴⁷ See NAT’L RESEARCH COUNCIL, NAT’L ACAD. OF SCIS., PESTICIDES IN THE DIET OF INFANTS AND CHILDREN 309 (1993) [hereinafter NAS REPORT], *available at* http://www.nap.edu/openbook.php?record_id=2126 (noting that “[e]xposure to pesticide residues from ambient air sources is generally higher in areas close to agricultural lands”).

⁴⁸ See Pesticides in the Air – Kids at Risk: Petition to EPA to Protect Children from Pesticide Drift 9–10 (Oct. 13, 2009), *available at* http://www.earthjustice.org/library/legal_docs/petition-pesticides-in-the-air-kids-at-risk.pdf [hereinafter Earthjustice Petition] (citing examples of drift incidents in communities and schools); Latino Issues Forum & Redefining Progress, Policy Brief, Better Safe than Sorry: Preventing Pesticide Drift in California 3 (Aug. 2004), *available at* <http://pesticidereform.org/downloads/pesticideDriftBrief.pdf>.

⁴⁹ See Objection to Tolerances Established for Certain Pesticide Chemicals, 67 Fed. Reg. 41,628, 41,632 (June 19, 2002) (reprinting text of environmental group petition making these claims).

more time in contact with potentially contaminated surfaces like floors and lawns.⁵⁰ Second, children may be disproportionately *impacted* by exposure to those pesticides. Because children's bodies are still developing, "their enzymatic, metabolic, and immune systems may provide less natural protection than those of an adult," and pesticide levels that would be safe for adults can damage the growing organs of young children, particularly their brains.⁵¹ Recent medical studies have shown evidence of increased childhood cancer and autism rates in communities located close to agricultural pesticide applications.⁵²

The socioeconomic disadvantages and heightened pesticide risks faced by farmworker families lead to substantial concerns about both environmental justice⁵³ and children's health. EPA states that environmental justice "will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work."⁵⁴ Clearly, this promise has not been met for farmworkers and their families: they are disproportionately exposed to pesticides both at work and at home, and lack protections equivalent to those available to the average American. Admittedly, part of the risk to farmworker communities may be an unavoidable consequence of modern American agriculture, and true environmental justice

⁵⁰ See EPA, Protecting Children from Pesticides, <http://www.epa.gov/pesticides/factsheets/kidpesticide.htm>; GAO, PESTICIDES, *supra* note 16, at 17; Earthjustice Petition, *supra* note 48, at 5.

⁵¹ GAO, PESTICIDES, *supra* note 16, at 17; *see also* Earthjustice Petition, *supra* note 48, at 5.

⁵² See, e.g., Eric M. Roberts et al., *Maternal Residence Near Agricultural Pesticide Applications and Autism Spectrum Disorders among Children in the California Central Valley*, 115 ENVTL. HEALTH PERSP. 1482 (2007) (initial study suggesting link between autism spectrum disorders and proximity to organochlorine pesticide applications); Rudolph P. Rull et al., *Residential Proximity to Agricultural Pesticide Applications and Childhood Acute Lymphoblastic Leukemia*, 109 ENVTL. RESEARCH 891 (2009) (finding link between a childhood cancer and moderate exposure to certain pesticides, and citing numerous related studies). EPA has disputed the validity of these and other studies. See Imidacloprid – Order Denying Objections to Issuance of Tolerance, 69 Fed. Reg. 30,047, 30,050–54 (May 26, 2004).

⁵³ EPA defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." EPA, Environmental Justice, <http://www.epa.gov/environmentaljustice/> (last visited May 8, 2010).

⁵⁴ *Id.*

arguably might require rethinking our entire approach to the practice of agriculture in this country. But less drastic measures could also help alleviate the disparity. As discussed below, EPA has the ability to take action to protect farmworkers from pesticides; EPA's authority and duty to do so are the subject of the next section.

III. EPA's Powers and Duties: The Legal Framework

a. Statutory Authority: Pesticide Registration and Tolerance Levels

EPA has been involved in pesticide regulation since the agency's inception. Both the administration of FIFRA⁵⁵ and the duty to set pesticide tolerances under the Federal Food, Drug, and Cosmetic Act (FFDCA)⁵⁶ were transferred to EPA in 1970;⁵⁷ since then, both statutes have been extensively amended. FIFRA has been interpreted to give EPA sole jurisdiction to regulate farmworker pesticide exposures.⁵⁸ In contrast, EPA and FDA share responsibilities under the FFDCA with regards to public health risks from food-borne pesticides.⁵⁹ The contours of EPA's duties have changed significantly over time, particularly with the passage of the Food Quality Protection Act of 1996 (FQPA).⁶⁰ Two aspects of EPA's authority, in particular, are relevant to the problem of farmworker pesticide exposures: pesticide registration and tolerance levels.

⁵⁵ 7 U.S.C. §§ 136-136y (2006).

⁵⁶ 21 U.S.C. § 301-399a (2006).

⁵⁷ See Reorganization Plan No. 3 of 1970 § 2(4), (8), 84 Stat. 2086, 2088 (1970).

⁵⁸ See *Organized Migrants in Community Action, Inc. v. Brennan*, 520 F.2d 1161 (D.C. Cir. 1975). The court in *Organized Migrants* found that EPA's "authority to promulgate rules regulating farmworker exposure to pesticides" preempted the Department of Labor from issuing such regulations. Consequently, farmworkers are not protected from pesticides under the Occupational Safety and Health Act. *Id.* at 1163.

⁵⁹ In the 1970s, EPA and FDA reached agreement on how they agencies would divide responsibility for pesticides. See Notice Regarding Matters of Mutual Responsibility, 36 Fed. Reg. 24,234 (Dec. 22, 1971); Amendment, 38 Fed. Reg. 24,233 (Sept. 6, 1973); Notice of Agreement, 40 Fed. Reg. 25,078 (June 12, 1975).

⁶⁰ Pub. L. No. 104-170, 110 Stat. 1489 (1996). This paper does not seek to address one of the most significant changes wrought by the FQPA, namely the exemption of pesticides from the definition of a "food additive," thus alleviating the so-called "Delaney paradox" for carcinogenic pesticides. That effort is largely tangential to the problem of farmworker exposure, and is abundantly detailed in other literature. See, e.g., Scott Douglas Bauer, Note, *The Food Quality Protection Act of 1996: Replacing Old Impracticalities with New Uncertainties in Pesticide Regulation*, 75 N.C. L. REV. 1369, 1373-87 (1997); James Smart, *All the Stars in the Heavens Were in the Right Places: The Passage of the Food Quality Protection Act of 1996*, 17 STAN. ENVTL. L.J. 273 (1998).

i. Registration and Labeling

Under FIFRA, EPA has sole authority to approve pesticides for use in the U.S., through a process of registration and periodic review.⁶¹ As part of the registration process, EPA must determine that the pesticide's use "will not generally cause unreasonable adverse effects on the environment,"⁶² and that the proposed labeling of the pesticide meets statutory and regulatory requirements.⁶³ FIFRA defines "unreasonable adverse effect" to mean both human dietary risk and "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits" of the pesticide.⁶⁴ Consequently, "[p]esticides are sold and distributed only if EPA determines that the benefits outweigh the risks."⁶⁵ The legislative history of FIFRA indicates that this balancing must encompass "every relevant factor that [EPA] can conceive of."⁶⁶ The approved labeling for a registered pesticide often reflects the results of this assessment, through use restrictions or required mitigation measures designed to reduce adverse effects.⁶⁷

EPA's responsibilities do not end once a pesticide is registered. First, under a 1988 amendment to FIFRA, EPA was required to reregister all pesticide active ingredients approved for sale prior to 1984,⁶⁸ to ensure pesticides that do not "meet today's scientific and regulatory standards" do not remain on the market.⁶⁹ EPA completed the reregistration process in 2008, ultimately canceling over a third of the relevant pesticides, and the Reregistration Eligibility

⁶¹ See 7 U.S.C. § 136a (2006).

⁶² *Id.* § 136a(c)(5).

⁶³ See *id.* § 136a(c)(5)(B), (c)(9). Improperly labeled pesticides are considered misbranded. See *id.* § 136(q).

⁶⁴ *Id.* § 136(bb).

⁶⁵ EPA, Draft PR Notice 2009-X: Additional Information and Questions for Commenters 4 (2009), *available at* <http://www.regulations.gov> (Docket No. EPA-HQ-OPP-2009-0628).

⁶⁶ S. REP. NO. 92-838, 92d Cong., 2d Sess. (1972), *reprinted in* 1972 U.S.C.C.A.N. 3993, 4032.

⁶⁷ *Id.*

⁶⁸ See 7 U.S.C. § 136a-1.

⁶⁹ See EPA, Pesticide Reregistration Facts, http://www.epa.gov/pesticides/reregistration/reregistration_facts.htm (last visited May 8, 2010).

Determinations (REDs) for reregistered active ingredients often include measures to reduce risks, which must be reflected on the labeling of end-use products containing those active ingredients.⁷⁰ Second, in 1996 the FQPA established a “registration review” program that requires EPA to review each pesticide registration by 2022 and then every fifteen years thereafter.⁷¹ This program is intended to replace one-time-only reregistrations with an ongoing review process that can take account of evolving knowledge about pesticide risks and benefits.⁷²

ii. Tolerances

Under the FFDCA, EPA establishes “tolerances” for pesticide residues in food. Tolerances are allowable quantities of pesticide residues, determined to be “safe” by EPA, which may remain on or in foods without rendering the food adulterated under the Act.⁷³ Prior to the FQPA, tolerances were determined for each pesticide individually, and only by reference to their use on food crops.⁷⁴ This approach both ignored the interactive health effects of different pesticide exposures with similar effects on the body, and ignored any exposures that did not come through food consumption. As a result, many pesticide risks to the general population — and many of the unique risks to farmworker families in particular — were simply not considered.

The 1996 FQPA made several dramatic changes to the tolerance-setting process, triggered in part by the publication of a major National Academy of Sciences (NAS) report

⁷⁰ *Id.*

⁷¹ See 7 U.S.C. § 136a(g)(1)(A)(iii)–(iv).

⁷² The registration review program got underway only a few years ago and EPA plans to open review on approximately 70 registrations per year through 2017. The agency plans to generally review older pesticides first, but will also group related pesticides during the process. See generally EPA, Registration Review: Program Highlights, http://www.epa.gov/oppsrrd1/registration_review/highlights.htm (last visited May 8, 2010) (discussing the program and timetable).

⁷³ See 21 U.S.C. § 346a (2006).

⁷⁴ See *What is a Risk Cup, Anyway? FQPA's Pivotal Concept*, FARM CHEMICALS, May 1998, available at http://findarticles.com/p/articles/mi_qa3842/is_199805/ai_n8805425.

arguing for significant reform to pesticide regulation to protect infants and children.⁷⁵ First, as an accompaniment to the reregistration process described above, the FQPA required EPA to reassess the safety of all tolerances established prior to 1996 by 2006.⁷⁶ This required EPA to reassess a total of 9,721 tolerances, a task EPA largely completed on schedule.⁷⁷

In addition, as recommended in the NAS report,⁷⁸ the FQPA mandated a comprehensive “risk cup” approach to safety evaluation, so-called because it sets a maximum safe exposure level from *multiple* sources of a particular pesticide-based harm; the tolerance level for a pesticide residue must be low enough to ensure that the residue exposure will not cause the “cup” to “overflow.” The FQPA defines “safe” as “a reasonable certainty that no harm will result from *aggregate* exposure to the pesticide chemical residue, including all anticipated dietary exposures and *all other exposures* for which there is reliable information.”⁷⁹ Residues not meeting this new standard for safety are considered an “unreasonable adverse effect” under FIFRA; consequently, EPA cannot register a pesticide unless total exposure is reasonably certain not to cause harm.⁸⁰

The “risk cup” approach requires EPA to consider “available information” about numerous factors in setting, adjusting, or revoking tolerances.⁸¹ Two types of considerations deserve special mention. First, EPA must consider both *aggregate* and *cumulative* exposures.

⁷⁵ See NAS REPORT, *supra* note 47, at 7–12 (providing recommendations).

⁷⁶ See 7 U.S.C. § 136a-1(g)(2)(E); 21 U.S.C. § 346a(q).

⁷⁷ See EPA, Tolerance Reassessment, <http://www.epa.gov/pesticides/tolerance/reassessment.htm> (last visited May 8, 2010). Only 84 tolerances were incomplete at the end of the ten-year window, and those were completed by September 2007. *Id.*

⁷⁸ See NAS REPORT, *supra* note 47, at 11 (“All exposures to pesticides — dietary and nondietary — need to be considered when evaluating the potential risks to infants and children.”) The FQPA does not limit this revised risk assessment to children, however.

⁷⁹ 21 U.S.C. § 346a(a)(2)(A)(ii) (emphasis added).

⁸⁰ See 7 U.S.C. § 136bb (defining “unreasonable adverse effect” to include “a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the standard under [21 U.S.C. § 346a]”); *see also* OFFICE OF PESTICIDE PROGRAMS, EPA, GENERAL PRINCIPLES FOR PERFORMING AGGREGATE EXPOSURE AND RISK ASSESSMENTS 9 (2001), *available at* <http://www.epa.gov/oppfead1/trac/science/aggregate.pdf> [hereinafter OPP, RISK ASSESSMENT PRINCIPLES] (“[T]he standard for making decisions whether to register or continue registration of a pesticide for food-use must satisfy the standards in the FFDCA.”).

⁸¹ See 21 U.S.C. § 346a(a)(2)(D).

Aggregate exposure refers to the “combined exposures to a single chemical across multiple routes (oral, dermal, inhalation) and across multiple pathways (food, drinking water, residential)”⁸² and cumulative exposure refers to exposure effects from *all* pesticides with a “common mechanism of toxicity,” meaning comparable health effects.⁸³ Second, EPA must consider the particular susceptibilities of “major identifiable subgroups of consumers” due to different sensitivities, aggregate exposure levels, and consumption patterns.⁸⁴

Finally, the FQPA included a special provision to protect infants and children. The NAS report found that “the toxicity of pesticides is frequently different in children and adults,” but that “quantitative differences in toxicity between children and adults are usually less than a factor of approximately 10-fold.”⁸⁵ The NAS report recommended “a presumption of greater toxicity to infants and children” through an “uncertainty factor” to be applied in setting tolerances “when there is evidence of postnatal developmental toxicity and when data from toxicity testing relative to children are incomplete.”⁸⁶ In other words, absent data to the contrary, EPA should presume that children are more susceptible to a pesticide chemical and adjust the tolerance accordingly, by capping residues at a level lower than would be required to protect adults.

The FQPA did exactly that. It required EPA, in making tolerance decisions, to specifically consider risks based on the consumption patterns, special susceptibilities, and cumulative exposures of infants and children.⁸⁷ And in determining if a tolerance was safe for children, it required EPA to apply “an additional tenfold margin of safety for the pesticide chemical residue and other sources of exposure . . . to take into account potential pre- and post-

⁸² OPP, RISK ASSESSMENT PRINCIPLES, *supra* note 80, at 8; *see also* 21 U.S.C. § 346a(a)(2)(D)(vi).

⁸³ 21 U.S.C. § 346a(a)(2)(D)(v).

⁸⁴ *Id.* § 346a(a)(2)(D)(iv), (vi), (vii).

⁸⁵ NAS REPORT, *supra* note 47, at 3.

⁸⁶ *Id.* at 8.

⁸⁷ 21 U.S.C. § 346a(a)(2)(C)(i).

natal toxicity.”⁸⁸ EPA could apply a different margin of safety only if “reliable data” demonstrated a different margin would be safe.⁸⁹ Consequently, once EPA calculates a tolerance level that is “safe” for the average adult, it must promulgate a formal tolerance that is ten times lower than that, or else use a factor (greater or less than the “10x factor”) that is scientifically supportable.⁹⁰

To summarize, FIFRA, the FFDCA, and the FQPA delineate a framework for EPA decision making, both in approving pesticides for use and in establishing permissible levels of exposure. Pesticides can be approved only if their overall benefits outweigh their costs, taking into account all relevant factors. And pesticide residues can remain on food only at levels that will be safe — even for more-susceptible children — taking into account numerous sources of exposure. These conditions suggest that EPA has the statutory capacity, and perhaps even the duty, to account for the unique exposure risks farmworker families face.

b. Executive Orders on Environmental Justice and Children’s Health

In addition to EPA’s particular duties under the statutes described above, the agency also must comply with executive orders applicable to all agencies. In the context of farmworker pesticide exposure, two executive orders issued by President Clinton, pertaining to environmental justice and children’s health, are particularly relevant. The orders provide further evidence of EPA’s legal duties to farmworkers, as a context for evaluating EPA’s actions to date.

⁸⁸ *Id.* § 346a(a)(2)(C)(ii).

⁸⁹ *Id.*

⁹⁰ Despite the presumption, EPA’s Office of Pesticide Programs (OPP) stated in 2002 that “[g]iven the extensive amount of data available, . . . in most instances there will be sufficient reliable data to conduct an individualized assessment of what additional FQPA safety factor is necessary.” OFC. OF PESTICIDE PROGRAMS, EPA, DETERMINATION OF THE APPROPRIATE FQPA SAFETY FACTOR(S) IN TOLERANCE ASSESSMENT 13 (2002) [hereinafter OPP, SAFETY FACTOR POLICY]; *see also* Imidacloprid – Order Denying Objections to Issuance of Tolerance, 69 Fed. Reg. 30,042, 30,056–66 (May 26, 2004) (explaining use of a 3x safety factor instead).

In 1994 President Clinton issued Executive Order 12,898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.”⁹¹ The order required federal agencies to “make achieving environmental justice part of [their] mission by identifying and addressing . . . disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”⁹² Each agency must develop “an agency-wide environmental justice strategy” to revise agency programs to among other things, “promote enforcement of all health and environmental statutes” in minority and low-income communities, and “improve research and data collection” about minority and low-income populations.⁹³ Particularly relevant to farmworkers is the requirement that, “whenever practicable and appropriate,” environmental and human health research “include diverse segments of the population . . . , including segments at high risk from environmental hazards, such as . . . workers who may be exposed to substantial environmental hazards.”⁹⁴ This requirement seems applicable to EPA research efforts underlying cost-benefit analyses and tolerance assessments for pesticides.

EPA has embraced the environmental justice mandate to a considerable degree.⁹⁵ The agency established an Office of Environmental Justice in 1992,⁹⁶ and EPA’s 1995 Environmental Justice Strategy, developed pursuant to the executive order, stated an early commitment to ensuring that “[n]o segment of the population . . . , as a result of EPA’s policies, programs, and

⁹¹ Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 11, 1994).

⁹² *Id.* § 1-101, at 7629.

⁹³ *Id.* § 1-103(a), at 7630.

⁹⁴ *Id.* § 3-301(a), at 7631.

⁹⁵ See generally EPA, Environmental Justice, <http://www.epa.gov/compliance/ej/> (last visited May 8, 2010) (detailing EPA efforts).

⁹⁶ See EPA, Environmental Justice: Frequently Asked Questions, <http://www.epa.gov/compliance/ej/resources/faqs/index.html> (last visited May 8, 2010). The office was originally called the Office of Environmental Equity; its name was changed in 1994.

activities, suffers disproportionately from adverse human health and environmental effects.”⁹⁷

While in 2004 EPA’s Office of the Inspector General (OIG) issued a report critiquing EPA’s environmental justice efforts,⁹⁸ since that time EPA has taken additional steps to address environmental justice. One significant development is the annual promulgation of environmental justice “action plans” from each EPA headquarters office and each regional office. EPA’s Office of Prevention, Pesticides, and Toxic Substances (OPPTS) has included pesticide-related environmental justice initiatives in several recent action plans.⁹⁹

In 1997 President Clinton issued Executive Order 13,045, “Protection of Children from Environmental Health Risks and Safety Risks.”¹⁰⁰ Noting the scientific agreement that “children may suffer disproportionately from environmental health risks and safety risks,” the order required agencies to prioritize identification of disproportionate environmental health and safety risks to children, and “ensure that . . . policies, programs, activities, and standards address” such risks.¹⁰¹ The order also required that when agencies submit major agency actions to the Office of Management and Budget (OMB) for pre-promulgation cost-benefit review, the agency include

⁹⁷ EPA, THE EPA’S ENVIRONMENTAL JUSTICE STRATEGY 3 (1995), *available at* http://www.epa.gov/compliance/ej/resources/policy/ej_strategy_1995.pdf.

⁹⁸ OFC. OF INSPECTOR GENERAL, EPA, REPORT NO. 2004-P-00007, EVALUATION REPORT: EPA NEEDS TO CONSISTENTLY IMPLEMENT THE INTENT OF THE EXECUTIVE ORDER ON ENVIRONMENTAL JUSTICE (2004). The OIG report noted that “EPA has not . . . consistently integrated environmental justice into its day-to-day operations,” *id.* at i, and in particular objected to EPA’s failure to adhere to the order’s specific focus on minority and low-income populations, instead focusing on “environmental justice for everyone,” *id.* at ii. However, EPA objected strenuously to OIG’s characterization of the order. See Memorandum from Stephen L. Johnson, Administrator, to Nikki Tinsley, Inspector General, Agency Response to Recommendations Provided in the OIG Evaluative Report (June 7, 2004), *available at* <http://www.epa.gov/compliance/ej/resources/policy/oig-report-ej-cover-memo-response-6-8-04.pdf>.

⁹⁹ For example, the 2009 action plan selected as a key “focus area” incorporation of environmental justice into pesticide risk assessments. See OFC. OF PREVENTION, PESTICIDES, AND TOXIC SUBSTANCES, ACTION PLAN TO INTEGRATE ENVIRONMENTAL JUSTICE 3–4 (2009). And the 2007–2008 plan highlighted efforts to improve pesticide safety training and hazard communication for farmworkers, as well as new risk mitigation measures for soil fumigants to protect workers and their children. See OFC. OF PREVENTION, PESTICIDES, AND TOXIC SUBSTANCES, ACTION PLAN TO INTEGRATE ENVIRONMENTAL JUSTICE 11, 12, 20 (2008).

¹⁰⁰ Exec. Order No. 13,045, 62 Fed. Reg. 19,885 (Apr. 21, 1997).

¹⁰¹ *Id.* § 1-101, at 19,885.

“an evaluation of the environmental health and safety effects of the planned regulation on children.”¹⁰²

EPA has responded to the executive order on children’s health, coupled with the children’s health mandates of the FQPA, in a number of ways. In May 1997, shortly after the order issued, EPA established the Office of Children’s Health Protection (OCHP).¹⁰³ Even prior to the order, EPA had created a seven-step “National Agenda to Protect Children’s Health from Environmental Threats”¹⁰⁴ and developed a children’s health policy explicitly requiring EPA to “consider the risks to infants and children consistently and explicitly as a part of risk assessments.”¹⁰⁵ EPA’s Office of Pesticide Programs (OPP) has also taken numerous actions with respect to children’s health and pesticides, which are discussed in greater detail below.¹⁰⁶ As with environmental justice efforts, OPP’s efforts to protect children have been critiqued by the OIG,¹⁰⁷ but several new efforts indicate ongoing attention to the issue.

The executive orders on environmental justice and children’s health are an important complement to the statutory framework of FIFRA, the FFDCA, and the FQPA. While the statutes give EPA the *authority* to address risks to farmworkers and their families, the executive orders give EPA the *duty* to do so. The farmworker demographics clearly indicate that

¹⁰² *Id.* § 5-501, at 19,887.

¹⁰³ See EPA, Children’s Health: Our History, http://yosemite.epa.gov/ochp/ochpweb.nsf/content/whowe_history.htm (last visited May 8, 2010).

¹⁰⁴ See *id.*

¹⁰⁵ See EPA, Policy on Evaluating Health Risks to Children (effective Nov. 1, 1995), available at <http://www.epa.gov/osa/spc/pdfs/memohlth.pdf>. In 2006, EPA produced a detailed guide for agency staff on how to comply with the children’s health policy and the executive order. See EPA, GUIDE TO CONSIDERING CHILDREN’S HEALTH WHEN DEVELOPING EPA ACTIONS (2006), available at [http://yosemite.epa.gov/ochp/ochpweb.nsf/content/ADPguide.htm/\\$File/EPA_ADG_Guide_508.pdf](http://yosemite.epa.gov/ochp/ochpweb.nsf/content/ADPguide.htm/$File/EPA_ADG_Guide_508.pdf)

¹⁰⁶ See *infra* Part IV.b. Some current efforts are detailed on EPA’s Children’s Health website. See EPA, Children’s Health: Regulations — Pesticides, <http://yosemite.epa.gov/ochp/ochpweb.nsf/content/regs.htm#6> (last visited May 8, 2010).

¹⁰⁷ See OFC. OF INSPECTOR GENERAL, EPA, REPORT NO. 2006-P-00028, EVALUATION REPORT: MEASURING THE IMPACT OF THE FOOD QUALITY PROTECTION ACT: CHALLENGES AND OPPORTUNITIES (2006). The OIG found OPP “primarily measured its success and the impact of FQPA by adherence to its reregistration schedule rather than by improvements in children’s health,” and advocated a shift in priorities from “outputs” to “outcomes.” *Id.* at 4.

farmworker communities are both minority and low-income communities, and environmental justice efforts should address the unique risks that they face. And farmworker children are particularly appropriate targets of children's health efforts, since they experience not only common pathways of pesticide exposure but also additional exposures as a result of their parents' occupations and their often close proximity to pesticide-treated fields. EPA certainly has not ignored its duties to protect children and at-risk communities, but as the next section will demonstrate, these efforts have often overlooked the special concerns of farmworker families.

IV. Past EPA Efforts: The Farmworker Family Gap

While this paper focuses on past EPA efforts to improve protections for farmworkers and their families, EPA activities in this general area are not a new development. In fact, as this section will demonstrate, EPA has a long history of regulatory efforts to protect farmworkers from pesticides. And particularly since the passage of the FQPA, the agency has taken numerous actions to protect children from pesticides. As discussed below, and as can be expected from any regulatory program, each of these efforts has some weaknesses in terms of focus or effectiveness. But there is a more glaring and systematic defect in EPA's past efforts: none of them have adequately addressed the unique risks facing *farmworker families*. In effect, EPA has failed to *combine* its twin focuses on farmworkers and children, producing a regulatory gap where these areas overlap and leaving farmworker families unjustifiably unprotected.

a. The Worker Protection Standard

One of EPA's earliest and most persistent efforts to address pesticide risks to farmworkers is the Worker Protection Standard (WPS), a set of regulations designed to protect farmworkers from harmful effects associated with direct and indirect use and handling of

pesticides.¹⁰⁸ The first WPS was promulgated in 1974.¹⁰⁹ It prohibited applying pesticides in the vicinity of unprotected workers, and required that farmworkers be given warnings when pesticides were to be applied.¹¹⁰ It also established “reentry intervals,” barring unprotected workers from entering treated fields “until sprays have dried or dusts have settled.”¹¹¹ Its application was limited to farmworkers performing hand labor in fields and thus did not include activities such as mixing or loading pesticides or operating pesticide-application equipment — obviously some of the most exposure-prone jobs — as well as non-field work in greenhouses or forestry.¹¹²

A major overhaul in 1992 dramatically expanded the scope of the WPS and added new protective requirements.¹¹³ The WPS now covers both pesticide “handlers” (such as those who mix, load, or apply pesticides, or deal with pesticide application equipment), and “workers” at forests, greenhouses, and nurseries as well as farms. Its goals are threefold: to reduce exposures, to mitigate exposures that do occur, and to provide workers with information and training.¹¹⁴ To accomplish these goals, the WPS provides three tiers of protections. First, both handlers and workers must receive their respective EPA-approved pesticide safety training and must have

¹⁰⁸ 40 C.F.R. pt. 170 (2010). Amendments in 1972 to FIFRA gave the agency authority to establish such regulations by creating an enforceable requirement that pesticides be used in accordance with their labeling, *see* 7 U.S.C. § 136j(a)(2)(G) (2006), and requiring that labeling contain “directions for use . . . adequate to protect health and the environment,” *id.* § 136(q)(1)(F). This broad language has been interpreted to give EPA authority to impose regulations protecting farmworkers, based largely on legislative history. *See* *Organized Migrants in Community Action, Inc. v. Brennan*, 520 F.2d 1161, 1168 (D.C. Cir. 1975) (“[I]t is absolutely clear that by enacting [the 1972 amendments] Congress intended to vest EPA with authority over farmworker exposure to pesticides.”); *Final Rule: Worker Protection Standard*, 57 Fed. Reg. 38,102, 38,102 (Aug. 21, 1992) (“The legislative history of the 1972 amendments indicates an express intent of Congress that farmers, farmworkers, and others be afforded such protection under FIFRA.”)

¹⁰⁹ *Worker Protection Standards: Restatement of Certain Existing Standards*, 39 Fed. Reg. 16,888 (May 10, 1974).

¹¹⁰ *Id.* at 16,889–90.

¹¹¹ *Id.* at 16,889. The reentry interval was extended for twelve highly toxic pesticides. *Id.* Workers could enter the field during the reentry period if they wore “protective clothing,” defined as a head covering, long-sleeved shirt and pants, socks, and shoes. *Id.* at 16,990.

¹¹² *See* *Final Rule: Worker Protection Standard*, 57 Fed. Reg. 38,102, 38,103 (Aug. 21, 1992).

¹¹³ The overhaul was based in part on ongoing reports of worker poisonings, delays in the reregistration process, and increased use of acutely toxic pesticides (organophosphates and carbamates). *See id.*

¹¹⁴ *See id.* at 38,104.

access to decontamination supplies, pesticide safety information, and “emergency assistance” (including transportation and details about their exposure). Second, *workers* cannot enter treated areas during pesticide applications or subsequent “restricted entry intervals” (REIs), and they must be warned prior to applications. Third, *handlers* must be provided with personal protective equipment (PPE) and specific instructions on the pesticide they are applying, and they cannot apply pesticides so as to contact any person other than another handler wearing PPE.¹¹⁵

The WPS seems to have the potential to provide strong protections to farmworkers, and perhaps even to farmworker families. Most significant is the “no-contact” provision, requiring pesticide handlers and their employers to ensure “that no pesticide is applied so as to contact, *either directly or through drift, any worker or other person*” besides another handler.¹¹⁶ If read literally, this provision could be understood to protect not only farmworkers from exposure on the job, but to protect farmworkers and their families in their homes and communities as well. For example, this provision could require on-site bathing or laundry drop-off before workers leave the farm, helping to prevent “track-in” when workers bring pesticides back to their homes on their skin, clothes, and shoes. It could similarly require no spraying of pesticides upwind of agricultural communities or close to schools, parks, and other areas where farmworkers and their families gather. And it could prohibit application of pesticides in a manner, or under conditions, which could lead to a reasonable risk of contact (such as aerial application on a windy day).

Despite the promise of the WPS, it has proven to be ineffective not only in protecting farmworker families but in protecting the farmworkers themselves. On a practical level, the WPS program is hampered by inadequate funding and enforcement. Through FIFRA’s

¹¹⁵ See EPA, WPS QUICK REFERENCE GUIDE, *supra* note 8. Certain highly toxic pesticides and fumigants also require handlers to maintain voice or visual contact during the application process. *Id.*

¹¹⁶ 40 C.F.R. § 170.210(a) (2010) (emphasis added)

requirement of state primacy in enforcement of pesticide use violations, and opportunity for state-federal cooperative enforcement, virtually all states are responsible for enforcement of the WPS, rather than EPA.¹¹⁷ State inspections of agricultural sites are overseen by the EPA regional office in the area, but these offices have widely differing levels of oversight and lack a uniform understanding about how many inspections are necessary per year or even what constitutes an inspection in the first place.¹¹⁸ EPA provides states with funding for pesticide enforcement activities, to the tune of \$20 million in 1999, but only \$2 million is “specifically allocated for worker protection enforcement.”¹¹⁹ With a mere \$40,000 per state per year, it is hardly surprising that so few inspections are done.

With so few inspections, it may be difficult to determine if employers are complying with the WPS. But states that do have fairly robust inspection programs still experience widespread violations and poisoning incidents. For example, data collected between 1998 and 2001 by the California Department of Pesticide Regulation (DPR) found numerous violations of the WPS in that state. At substantial percentages of inspected sites, proper protective gear was not being used (42%), treated fields did not have posted warnings (35%), and basic decontamination supplies (soap, water, and towels) were not available (30%).¹²⁰ In the majority of sites, pesticide application records were not accessible to workers (77%) and pesticide safety leaflets were not displayed (53%).¹²¹ And among forty-seven reported illnesses due to REI violations in the

¹¹⁷ See 7 U.S.C. §§ 136u, 136w-1 (2006). Forty-nine states are now authorized to cooperate with EPA in monitoring, enforcement, training, education, and cost-sharing through a grant program. See EPA, FIFRA State and Tribal Assistance Grant Program, <http://www.epa.gov/compliance/state/grants/fifra.html> (May 8, 2010).

¹¹⁸ See GAO, PESTICIDES, *supra* note 16, at 20–22. The GAO found that some states conducted no inspections at all in 1998, *id.* at 21, and some states counted asking “a single question about worker protection” to be an inspection, *id.* at 22. Some EPA regional offices never conducted joint inspections with state officials. See *id.*

¹¹⁹ *Id.* at 20; see also EPA, FIFRA State and Tribal Assistance Grant Program, *supra* note 117 (noting \$19.2 million disbursed for enforcement, with additional funds available for certification and training).

¹²⁰ See FIELDS OF POISON, *supra* note 29, at 18 tbl.4.1.

¹²¹ See *id.* at 18 tbl.4.2.

previous decade, only five were due to a worker ignoring a notice; in all other cases, employers either failed to provide required oral or written notices or else simply ordered workers to enter a field despite posted warnings.¹²² This extensive noncompliance in California, historically a leader in inspection and enforcement, suggests that compliance might well be far worse in states where employers can count on little or no oversight.

Even setting aside uneven enforcement and inadequate funding, there is reason to think that the WPS cannot adequately protect farmworker families. First, even with complete compliance, poisonings may be unavoidable and even commonplace. Again, data from California is instructive. In the period from 1997 to 2000, the DPR found that nearly thirty-eight percent of the 1,899 reported poisonings were *not* due to violations of the WPS, suggesting substantial numbers of poisonings may result even with full compliance.¹²³ The figures were even higher for exposures due to drift and residue (42% and 56%, respectively, with no relevant violations), suggesting that WPS controls in these areas may be particularly inadequate.¹²⁴

Second, the REIs established by EPA to date have been inadequate in several respects, despite the fact that EPA considers them “one of the most important protections provided” in the WPS.¹²⁵ REIs are set so that workers reenter the field at a time when typical farmworker tasks will no longer expose them to dangerous levels of airborne or residual pesticides. These determinations rely in part on body weight, but EPA has long used a “default” of 154 pounds —

¹²² See *id.* at 24 tbl.5.1.

¹²³ See FIELDS OF POISON, *supra* note 29, at 19 tbl.4.3. This included situations where no violations were found and situations where violations did not contribute to the poisoning. *Id.*

¹²⁴ See *id.* at 19.

¹²⁵ GAO, PESTICIDES, *supra* note 16, at 5; see also Keith Cunningham-Parmenter, *A Poisoned Field: Farmworkers, Pesticide Exposure, and Tort Recovery in an Era of Regulatory Failure*, 28 N.Y.U. REV. L. & SOC. CHANGE 431, 459–61 (2004) (detailing numerous failings of REIs and the WPS beyond those described herein).

considered a typical adult male worker's body weight — in most cases.¹²⁶ EPA has not utilized, or considered necessary, a lower body weight default that might better approximate the weight (and exposure risk) of children and adolescents present in the fields.¹²⁷ Furthermore, REIs currently do not account for either aggregate effects from exposure outside the fields, or cumulative effects of many pesticides with a common mechanism of toxicity.¹²⁸ In effect, this approach treats the farmworker's "risk cup" as empty when determining REIs, an obviously false premise. While the assumptions undergirding the WPS are changing,¹²⁹ for now the WPS has a dismayingly record of failures and inadequacies, and the diffuse authority and substantial underfunding of the state enforcement programs only aggravate the problem.

b. The FQPA Risk Assessment Process

While the process of setting REIs for workers fails to consider several variables important to a rigorous scientific assessment, we might hold out more hope for the FQPA's tolerance-setting process. After all, the FQPA mandated not only a comprehensive "risk cup" analysis of all possible pesticide exposures, but also imposed a safety factor designed to protect infants and children. It seems clear that the FQPA's purpose was to ensure pesticide residues on food would not endanger Americans, particularly children; has it delivered on that promise for farmworker children? Sadly, as discussed below, the answer is clearly "no." And as the REI situation suggests, the FQPA's benefits for tolerance-setting have not yet spread to other areas of EPA pesticide regulation.

¹²⁶ See GAO, PESTICIDES, *supra* note 16, at 19; Cunningham-Parmenter, *supra* note 125, at 459. EPA uses a lower body weight (132 pounds) for pesticides with "potential fetal developmental effects" to conform with the likely body weight of adult women. GAO, PESTICIDES, *supra*, at 19.

¹²⁷ Instead, EPA claims that adolescents (ages 12–17) will have similar exposure levels to adults despite smaller body weights, and that children (under age twelve) are not considered because they are not of legal age to work and thus the WPS is inapplicable to them. See GAO, PESTICIDES, *supra* note 16, at 16, 19.

¹²⁸ See Cunningham-Parmenter, *supra* note 125, at 460.

¹²⁹ See Pesticide Registration (PR) Notice 2009-X Draft: Pesticide Drift Labeling (2009), *available at* <http://www.regulations.gov> (Docket No. EPA-HQ-OPP-2009-0628).

i. Considering Only Non-Occupational Exposures.

First, there is a significant gap in the FQPA's coverage that has prevented EPA from accurately assessing the true pesticide risks facing farmworker families. While EPA assesses dietary and residential pesticide exposures in setting tolerances, it does *not* consider *occupational* exposures such as those experienced by farmworkers. Recall that tolerances can only be set at levels that are "safe," and the FQPA defines safety to mean "a reasonable certainty that no harm will result from . . . all anticipated dietary exposures and *all other* exposures."¹³⁰ The definition seems to require that EPA must consider potential occupational exposures — both direct exposures to farmworkers at work, and consequent "trickle-down" effects of those occupational exposures, such as pesticide track-in and drift.

Yet at the same time, in listing factors EPA should consider in tolerance decisions, the FQPA explicitly directs EPA to consider, "among other relevant factors," information about "aggregate exposure levels . . . including . . . exposure from *non-occupational* sources."¹³¹ EPA has read this "non-occupational" language back into the safety definition as a limitation, stating repeatedly that the safety definition encompasses "exposure through drinking water and in residential settings, but does not include occupational exposure."¹³² As a result, in determining aggregate exposure, EPA considers only "exposures from the pesticide residues in food and all other non-occupational exposures, including drinking water . . . and exposure through pesticide use in gardens, lawns, or buildings (residential and other indoor uses)."¹³³ EPA does not consider occupational exposure to be part of aggregate exposure.

¹³⁰ 21 U.S.C. § 346a(b)(2)(A)(ii); *see supra* text accompanying notes 79–80.

¹³¹ *Id.* § 346a(b)(2)(D)(vi) (emphasis added).

¹³² Final Rule: Tolerance Exemption for Residues of Quaternary Ammonium Compounds, 72 Fed. Reg. 51,180, 51,182 (Sept. 6, 2007).

¹³³ *Id.* at 51,183.

In 2002, as part of a larger series of objections, the Natural Resources Defense Council (NRDC) objected to EPA's focus on non-occupational exposures.¹³⁴ NRDC argued that "worker exposure is clearly included" in the FQPA safety definition's "catch-all category of 'all other exposures'" and that the list of factors "is plainly illustrative rather than exhaustive" because it "explicitly requires EPA to consider 'relevant factors' other than those enumerated."¹³⁵ NRDC essentially argued that these provisions could be harmonized by making non-occupational exposure only one factor among many "relevant," but not all explicit, factors — including occupational exposure — to be considered by EPA in determining a "safe" tolerance.¹³⁶ NRDC claimed any interpretation that excluded occupational exposure "violates the FQPA's mandate that aggregate exposure assessments include *all* exposures for which there is reliable information."¹³⁷

EPA rejected NRDC's interpretation, stating the language in the statutory list of factors "quite plainly directs EPA to limit consideration of aggregate exposures . . . to those exposures arising from non-occupational sources."¹³⁸ Although acknowledging "some ambiguity" in how the two statutory provisions interacted, EPA said NRDC's interpretation "runs afoul of Congress' explicit mandate that such exposures not be included" and contravenes basic statutory interpretation principles.¹³⁹ EPA harmonized the two provisions in a different way, finding that

¹³⁴ See *Objection to Tolerances Established for Certain Pesticide Chemicals*, 67 Fed. Reg. 41,628, 41,630–34 (June 19, 2002) (reprinting text of a representative NRDC petition).

¹³⁵ *Id.* at 41,633. NRDC also noted EPA had cited "no provision of the statute or any other authority to support its repeated incantation that aggregate exposure does not include occupational exposure." *Id.*

¹³⁶ While the FQPA directs EPA's attention specifically to non-occupational exposures in § 346a(b)(2)(D)(vi), it never explicitly forbids EPA to consider occupational exposure, and tolerances must be safe based on *all* exposures under § 346a(b)(2)(A)(ii).

¹³⁷ 67 Fed. Reg. at 41,633.

¹³⁸ *Imidacloprid – Order Denying Objections to Issuance of Tolerance*, 69 Fed. Reg. 30,042, 30,067 (May 26, 2004).

¹³⁹ *Id.*

Congress had clearly stated (a) that occupational exposure was not part of aggregate exposure, and (b) that occupational exposure was not relevant to safety.¹⁴⁰

However irrational such contentions might appear on their face, legislative history suggests that EPA has the better of this argument. The Report of the House Committee on Commerce accompanying the FQPA states that, for tolerance setting:

“[S]afe” means there is a reasonable certainty that no harm will result from *aggregate exposure* to the pesticide chemical residue. The Committee understands “aggregate exposure” to the pesticide chemical residue to include dietary exposures under all tolerances for the pesticide chemical residue, and exposure from other *non-occupational sources* as well.¹⁴¹

The most natural reading (though certainly not the only possible reading) of this congressional language is that safety encompasses only aggregate exposure, which in turn encompasses only non-occupational exposure. Unfortunately, no legislative history explains Congress’s reason for denying EPA even discretionary authority to consider occupational exposures to farmworkers in determining “safe” tolerance levels. But EPA’s proposed explanation in its response to NRDC is most likely correct: Congress’s concern in the FQPA was establishing “safe” pesticide levels for the average American consumer, not highly at-risk populations.¹⁴²

As its name implies, the FQPA was concerned with risks from *food*, and its goal was to ensure that food consumption would not cause the consumer’s “risk cup” to overflow. Its approach in tolerance setting is appropriate to achieving this goal for typical consumers who face no occupational exposure. But for farmworkers and their families, it does not ensure safety.

¹⁴⁰ *Id.* at 30,068 (“Congress, by excluding occupational exposures from the term ‘aggregate exposure’ . . . , was, in effect, determining the relevance of occupational exposure to aggregate exposure and the safety determination.”).

¹⁴¹ H.R. Rep. No. 104-669, 104th Cong., 2d Sess., at 40 (July 23, 1996).

¹⁴² See 69 Fed. Reg. at 30,068 (“Presumably, Congress excluded occupational exposures from [§ 346a] because it determined that acceptable levels in food for the general public should not be set using the discrete, and highly regulated (including regulation by EPA under FIFRA), exposures occurring in the workplace as an assumed underlying exposure.”).

Like a crack in the risk cup, this statutory gap lets important occupational exposures trickle out of the analysis, allowing tolerances to be set that appear safe when occupational exposures are ignored, but in reality are potentially unsafe for both farmworkers and their families.

While EPA's approach is arguably the correct one, given legislative intent, it leaves a major gap in the FQPA's protections. The higher exposures of agricultural workers and, indirectly, their families, are simply not considered in determining how much pesticide residue it is safe for them to consume. If this gap leads to unsafe levels of total exposure for farmworker families, EPA arguably is not meeting its environmental justice obligations. But if the statutory scheme *dictates* such a gap, is there anything that EPA can do to alleviate this disparity without legislative action? While EPA may have some recourse, thus far it has not exercised it.

ii. Lower Child Safety Factors Despite Inconclusive Data

A second reason why the FQPA has not sufficiently delivered safety to farmworker children is that EPA has not fully utilized the FQPA's "child safety factor" to protect this particular subpopulation of children, citing inadequate or inconclusive data. Recall that the FQPA required EPA to apply a tenfold safety factor (the "10x factor") to protect children absent "reliable data" supporting a different factor.¹⁴³ Although the FQPA establishes a default 10x safety factor, OPP quickly developed a policy describing when EPA would deviate from the 10x factor, and how "appropriate" safety factors would be determined.¹⁴⁴ In several respects, OPP's policy seems to strongly encourage the development of *lower* safety factors for most pesticides.

First, the policy discourages reliance on the default 10x factor and states that "in most cases there will be sufficient reliable data to conduct an individualized assessment."¹⁴⁵ Second,

¹⁴³ See *supra* text accompanying notes 85–90.

¹⁴⁴ See OPP, SAFETY FACTOR POLICY, *supra* note 90. The policy was first drafted in 1999. See *id.* at 5.

¹⁴⁵ *Id.* at 13.

the policy suggests *no* additional safety factor (i.e., a 1x safety factor) will be required in many cases — namely, when data “does not indicate a high level of concern for pre- and postnatal toxicity,”¹⁴⁶ or when the intraspecies safety factor, which predated the FQPA, is sufficient “to address the potential for greater sensitivity or susceptibility of children.”¹⁴⁷ This approach arguably turns the FQPA’s 10x factor on its head by making it the exception rather than the rule.¹⁴⁸ Third, the policy stressed that even if data indicated children were more sensitive or susceptible, “the risk assessor should not assume that there is a high level of concern.”¹⁴⁹

In essence, OPP’s policy emphasizes that sensitivity does not translate automatically into risk, and that risk does not necessarily justify any additional safety factor for children at all. These are conservative assumptions, and perhaps accurate ones – but one would think that, given the FQPA’s child-protection mandate, OPP would develop conservative assumptions that *favor* child protection. Instead, these assumptions have the potential to favor *less* protective outcomes that *decrease* the child safety factor. In any case, regardless of any theoretical argument against the OPP policy, the practical reality has been that EPA has often established child safety factors for pesticides that are below the 10x default, even in the absence of complete toxicity and exposure data.¹⁵⁰

¹⁴⁶ *Id.* at 30. The same is true when the data indicate *no* concern. In such cases, the presumption in favor of the 10x factor is “obviated.” See *id.* at 29. Consequently, instead of eliminating the 10x factor only when data indicates *no* concern, the OPP policy eliminates the factor whenever there is *anything other than high* concern.

¹⁴⁷ *Id.* at 29. The intraspecies factor, utilized long before the FQPA, is a 10x factor designed to account for variability among humans. OPP stated that “for most chemicals the very large majority of people, including children, respond sufficiently similarly” that risk assessors could simply rely on the intraspecies factor alone. *Id.*

¹⁴⁸ This is so because the consequences of OPP’s policy suggest the 10x factor — or indeed any factor at all — will only be necessary in a very few cases. See *supra* notes 147–148. This is particularly true in the case of the intraspecies factor, since OPP admits Congress intended the 10x factor to be *additional* to that factor, *id.* at A-3, but also states that in most cases the intraspecies factor will suffice on its own, *id.* at 29.

¹⁴⁹ *Id.* at 30; see also 69 Fed. Reg. at 30,057 (noting that “the focus should not be simply on whether the young have a greater *sensitivity* to a pesticide but rather on what reliable data show with regard to the *safety* of infants and children in situation where studies have shown that the young are more sensitive to a pesticide” (emphasis added)).

¹⁵⁰ See, e.g., 69 Fed. Reg. at 30,056–66.

EPA's preference for lower child safety factors is particularly concerning with regard to farmworker children, because, as noted above, farmworker families face unique routes of exposure that EPA often does not consider in determining exposure levels, including airborne drift and volatilization, track-in, and working or playing in treated fields. These routes of exposure might justify higher safety factors; at the least, the lack of consideration of these exposure routes calls for a precautionary approach in setting the safety factor. But instead of opting for the default 10x standard when there is reason to believe farmworker children may be at risk, EPA has frequently set a safety factor that, while protective of most children, may not be sufficient to protect farmworker children.

NRDC's 2002 petition to EPA regarding tolerances for five pesticides highlights this problem. NRDC noted that "none of the regulations establishing tolerances for these five pesticides consider exposure through air drift, migration of contaminated soil, or residential take-home exposures," and submitted studies demonstrating the potential for farmworker children to experience such exposures.¹⁵¹ EPA vigorously disputed the validity of the submitted studies, and cited several other studies with opposite or inconclusive results.¹⁵² Ultimately, the agency concluded that "the data submitted by NRDC have not shown that there are significant exposures to farm children that occur as a result of living in close proximity to agricultural operations," and thus EPA had "sufficient reliable data to find that an additional 10X factor is not needed."¹⁵³ Instead, EPA used lower safety factors for these five pesticides, and set tolerances based only on dietary, drinking water, and residential use. The resulting tolerances were, in some cases,

¹⁵¹ 67 Fed. Reg. at 41,633.

¹⁵² See 69 Fed. Reg. at 30,050–54.

¹⁵³ *Id.* at 30,058.

disturbingly close to projected exposure levels. Any additional exposure to any child, including a farmworker's child, might be unsafe.¹⁵⁴

The safety factor determination for one pesticide in the petition – imidacloprid – nicely illustrates the consequences of combining low safety factors, detailed here, with analysis of only limited exposure routes, detailed in Part IV.b.i. For imidacloprid, EPA used a safety factor of 3x and determined a “safe” margin of exposure (MOE) of 300 for children ages one to six; any exposure level lower than 300 would be unsafe.¹⁵⁵ EPA then determined that the MOE for this age group, based on the tolerance it had established for imidacloprid. It determined that the MOE from chronic dietary exposure and hand-to-mouth exposure to turf, gardens, and pets was 302 — just barely above the safe MOE.¹⁵⁶ If EPA had used the default 10x factor, the “safe” MOE would have been 1000 and the tolerance EPA had chosen would have been unsafe (which might explain why a 3x factor, not a 10x factor, was used). But even if a 3x safety factor is appropriate, if farmworker children experienced *any* additional routes of exposure beyond those assessed by EPA, the expected MOE could easily dip *below* 300, making the tolerance EPA had selected unsafe.¹⁵⁷ In other words, EPA's chosen tolerance level is only safe for farmworker children if they experience virtually no additional exposure to imidacloprid beyond that calculated for “ordinary” children based on “ordinary” exposure sources.¹⁵⁸

¹⁵⁴ See 67 Fed. Reg. at 41,631–32.

¹⁵⁵ See Imidacloprid: Pesticide Tolerances for Emergency Exemptions, 64 Fed. Reg. 39,041, 39,047 (July 21, 1999). The MOE is a ratio, using as a numerator the level at which no adverse effect was observed (the NOAEL) in a toxicology study, and as a denominator the anticipated exposure level. Thus, lower MOEs indicate more risk, since the NOAEL approaches the actual exposure level. See OPP, RISK ASSESSMENT PRINCIPLES, *supra* note 80, at 51. An MOE that is *larger* than the “safe” MOE is considered safe.

¹⁵⁶ *Id.*

¹⁵⁷ See 67 Fed. Reg. at 41,632.

¹⁵⁸ Another example is zeta-cypermethrin, where EPA used a *no* safety factor at all. See Zeta-Cypermethrin and Its Inactive R-isomers: Pesticide Tolerance, 67 Fed. Reg. 6422, 6426 (Feb. 12, 2002). This led to a “safe” MOE of 100, when a 10x safety factor would have produced a safe MOE of 1000. With a selected tolerance based only on dietary, drinking water, and residential exposure, EPA calculated numerous actual MOEs for children and infants

Of course, EPA's risk assessment process is complex, and perhaps its decisions about appropriate safety factors should not be second-guessed — though courts have done so.¹⁵⁹ But the fact that EPA does not consider *at all* the unique exposure routes of farmworker children at least raises the possibility that farmworker children are being inadequately protected by the safety factors EPA is using. If exposure data for this subpopulation is inconclusive, one approach — the one EPA has chosen thus far — is to dismiss it entirely and decide children in agricultural areas do not face any increased exposure risk. But another option — the more precautionary and protective option — would be to presume *some* increased exposure risk for agricultural areas, and use this uncertainty as a basis to *retain*, not discard, the FQPA's default 10x safety factor.

iii. Farmworker Children Not a Major Identifiable Subgroup

In addition to the 10x safety factor, the FQPA also directed EPA to consider the special sensitivities of “major identifiable subgroups of consumers,” distinguished by different sensitivities, aggregate exposure levels, and consumption patterns.¹⁶⁰ Farmworkers, farmworker families, or farmworker children are all potentially major identifiable subgroups. While it might be true that these children do not have unique sensitivities, they may have unique consumption patterns — due to their proximity to the fields, for example, they may be more likely to eat produce directly from the fields, and sooner after pesticide application than the average child.¹⁶¹

ranging from 300 to 1000. *Id.* at 6428. With no safety factor, these values were considered safe, but they would all have been unsafe if a 10x factor had been utilized.

¹⁵⁹ See *Nw. Coal. for Alternatives to Pesticides v. EPA*, 544 F.3d 1043, 1051-53 (9th Cir. 2008) (remanding to EPA tolerance determinations for three pesticides where safety factor was reduced to 3x or 1x, because record disclosed no evidence that these reductions were supported by reliable data, and noting that “it appears that the EPA chose these lower safety factors to acknowledge certain concerns about each pesticide, but with no specific evidence that these lower safety factors would actually account for the risks to infants and children,” *id.* at 1052).

¹⁶⁰ See *supra* text accompanying note 84.

¹⁶¹ See 67 Fed. Reg. at 41,632.

And they arguably represent very different aggregate exposure levels, based on their unique routes of exposure.¹⁶²

Thus far, EPA has declined to define any category of farmworker family members as a major identifiable subgroup. NRDC's 2002 petition to EPA stated that "farm children are a major identifiable subgroup under [the FQPA], and their unique dietary consumption patterns, aggregate exposure levels, and sensitivities to exposure should have been assessed" in setting the five pesticide tolerances at issue.¹⁶³ EPA rejected NRDC's contention, on two grounds. First, it claimed that such designation was *unnecessary* to protect farmworker children, because "[i]f a significant number of *any* of the population subgroups of children have higher exposures" that exposure would already be captured in the analysis for that *population* subgroup. "The fact that the children in the subgroup receiving the higher exposures are not themselves labeled a major identifiable subgroup in no way lessens EPA's consideration of their exposures."¹⁶⁴ Second, it claimed that such designation was *inappropriate* since NRDC had not "made an adequate case that the group of children NRDC designates as 'farm children' are an identifiable group." EPA noted comments regarding the "heterogenous nature of the group and NRDC's lack of precision in defining the group," and also observed that NRDC's proposed grouping was contrary to past EPA practice of "categorizing individuals by age, ethnicity, and region of the country."¹⁶⁵ Furthermore, EPA also noted some urban residents live just as close to agricultural areas as "farm children," thus "cloud[ing] the potential for a distinction between farm and non-farm children."¹⁶⁶

¹⁶² See *supra* text accompanying notes 50–52.

¹⁶³ 67 Fed. Reg. at 41,632.

¹⁶⁴ 69 Fed. Reg. at 30,068.

¹⁶⁵ *Id.* at 30,069.

¹⁶⁶ *Id.*

V. Conclusion: New Developments on the Horizon?

As this paper has shown, EPA's approval and safety evaluation process for pesticides leaves much to be desired in the area of farmworker protections. Despite clear mandates in the FQPA and the executive orders on environmental justice and children's health, EPA has failed to consider important pesticide exposure routes for farmworkers and their families, and has created inadequate protections for a socioeconomically disadvantaged group. And EPA has resisted attempts of groups like NRDC to get EPA to meet its obligations and respond to the unique risks of farmworker families.

Recently, EPA has proposed to make some changes to the current pesticide framework that may offer some increased protections to farmworker families. First, in November 2009, EPA proposed to revise the labeling on pesticides prone to drift, in order to minimize the risk of pesticides drifting off treated fields and into nearby homes and communities.¹⁶⁷ And in December 2009, EPA proposed to revise the risk assessment process to integrate the FQPA's approach in all risk assessments for all pesticides (not just food-use pesticides), by including a child-protective safety factor, using a "risk cup" approach, and reporting risks for particular subgroups, including teenage farmworkers and children brought to the fields during the workday.¹⁶⁸ Both of these proposals would be a significant step in the right direction, but it remains to be seen if they will go forward as planned; public comment periods for both proposed rules closed in the spring of 2010, and no final rules have yet been promulgated. Even if these changes do go forward, however, more is needed. Advocacy groups have already encouraged

¹⁶⁷ See Pesticide Registration (PR) Notice 2009-X Draft, *supra* note 130.

¹⁶⁸ See Revised Risk Assessment for Workers, Children of Workers in Agricultural Fields and Pesticides with No Food Uses (2009), *available at* <http://www.regulations.gov> (Docket No. EPA-HQ-OPP-2009-0889); Worker Risk Assessment, <http://www.epa.gov/pesticides/health/worker-rsk-assmnt.html> (last visited May 8, 2010).

EPA to take further steps, such as implementing buffer zones to prevent drift¹⁶⁹ and establishing compensation funds for affected workers.¹⁷⁰ Only EPA's future actions will reveal whether it will continue to downplay the risks to farmworker families, or whether the agency will pursue protective measures that fulfill the requirements of social and environmental justice.

¹⁶⁹ See Earthjustice Petition, *supra* note 48, at 23.

¹⁷⁰ See *FIELDS OF POISON*, *supra* note 29, at 25–26.